CONFERENCE ON DISARMAMENT

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GERMANY AND THE UNITED KINGDOM OF GREAT BRITAIN
AND NORTHERN IRELAND

Report on two joint chemical weapons Practice Challenge Inspections

Introduction

1. A number of countries have reported to the Conference on Disarmament the outcome of national Practice Challenge Inspections (PCIs), including the Netherlands, Canada, the Federal Republic of Germany and the United Kingdom. In June 1989 the United Kingdom submitted an interim report, CD/921, on the first two out of a programme of six PCIs at Government owned facilities. In CD/975 and CD/983 the Federal Republic described two PCIs at military facilities. In July 1990, in CD/1021, the United Kingdom reported the outcome of its two-year PCI programme. Most recently there has been the report in CD/1052 by Canada and the Netherlands on their joint PCI at a military base in Germany.

2. In view of the extensive experience both countries had gained in the course of their national PCIs, it was decided to conduct two joint exercises, one in each ountry, to give added realism to the PCI concept, to test further the conclusions they had already reached, and to see what further lessons might be learned. This paper describes the outcome of these joint PCIs.

The exercises

3. The first exercise was held in the Federal Republic of Germany from 21-23 May 1990 at an air force operational base. The exercise was conducted under joint Anglo-German control, with the United Kingdom providing the Inspection Team (IT) and Challenging State Observer (CSO), and the Federal Republic the Home Team (HT). The second exercise was held in the United Kingdom from 18-21 June 1990 at an ammunition storage facility. This exercise was also held under joint control but with the other roles reversed.

4. Both countries concluded that the joint exercises had been conducted in a very positive and co-operative spirit, and that a number of valuable lessons had been learnt, both in confirming the conclusions that had been reached in their respective national PCIs, and in providing new insights and perspectives on challenge inspection. These are described below.

Arrival at Point of Entry

5. The arrival of the IT at the Point of Entry was played on the second exercise. The official reception procedures were similar to those used for other inspections (e.g. INF, Stockholm Document) which have proved successful. Such procedures could be adopted for CW Convention inspections.

6. The IT brought with them a vehicle equipped with verification instrumentation. This was subjected to a thorough inspection by the HT which took some time. It was concluded that the availability of an agreed list of specified verification equipment would have been extremely useful. It is suggested that the Technical Secretariat prepare a list specifying all items of equipment earmarked for CWC verification which could be agreed by all States Parties if the vehicle and its equipment were so accepted as standard, this would reduce - but not entirely eliminate - the time spent at the Point of Entry checking the Inspectors' equipment.

Initial briefings

7. On both exercises initial presentations to the IT on the challenged site were comprehensive and provided them with a reasonable basis for the elaboration of an inspection plan. Such briefings can quickly establish a certain level of confidence between inspectors and host State. For preparation of the site, and specifically the introductory presentation, as well as during the conduct of the inspection itself, the presence of personnel fully familiar with the Convention and its inspection requirements is of vital importance.

Helicopter overflight

8. On the second exercise the offer of a helicopter overflight of the challenged site was accepted by the IT. Such flights can, at larger sites, prove invaluable in enabling the IT to orientate itself and prepare an initial inspection plan. They should be offered wherever it is practical to do so and safety regulations permit.

Managed access

9. On the first exercise the IT were granted access on request to any building on-site. On the second exercise the IT were in line with the RANSAC proposals elaborated in the United Kingdom paper, CD/1021, offered access to 20 per cent of the ammunition storage bunkers. In the event they chose to visit a much smaller proportion which they considered still gave them sufficient confidence, when coupled with random checks on storage bunkers marked as empty. It was noted that the level of access required to build sufficient confidence will vary from site to site.

10. A potential new element in the range of managed access techniques was identified on the first exercise when shrouds covering some equipment were briefly lifted in order to allow the IT to momentarily observe the shrouded items. The glimpse was long enough to reveal the general type of equipment present but short enough to prevent revealing numbers or technical details.

Sampling

11. Both portable and static X-ray facilities were used for verifying the contents of munitions in the course of the two exercises. Both systems worked well. Gamma ray spectroscopy was also used. In some circumstances however, such analysis could reveal sensitive characteristics of munitions. In such cases other methods may be preferable such as neutron activation analysis, sample-taking through a small drilled hole, and only as a method of last resort, destructive testing. Different non-destructive ways of verification were described in the Federal Republic of Germany paper CD/1026. If destructive testing is none the less to be an option, contingency plans must be made by the Challenged State during inspection preparations to allow for this, if necessary at a firing range outside the challenged site.

12. In both inspections much chemical sampling was performed. Samples were taken both inside and outside buildings from a range of surfaces and media. Environmental samples were taken from soil, air, etc. Environmental sampling is a time consuming approach; its real value to the overall inspections requires further consideration. For example, at a site declared to have been used in the past to store CW stocks, any positive result from an environmental sample would be of limited value. In general it is recommended that standardized sampling and measuring methods should be developed for use by the Technical Secretariat. It will also be necessary to elaborate procedures for maintaining the integrity of any samples taken.

13. On the second exercise difficulties were encountered with the mobile mass spectrometer brought by the IT owing to fluctuations in the power supply at the challenged site. In order to ensure the smooth operation of the IT's equipment and avoid any scope for manipulation by the Challenged State there would be advantage in the IT having its own mobile generator as part of its standard equipment.

Communications

14. Communications during both exercises between sub-teams worked very well. Good communications will be essential to the smooth running of inspections. There may be advantage in the IT bringing its own communications equipment - although there might be safety constraints on its use on certain sites. The Challenged State representatives will require their own equipment to maintain contact when the IT divides.

Language/interpretation

15. On the first inspection the IT and HT spoke in their native languages throughout the inspection with interpreters used to translate. It was particularly instructive to introduce this new element into trial inspections. Although the interpreting generally went well, problems did occur when it came to translating military, chemical and Convention terminology. It will be essential for the Technical Secretariat to have available to it a pool of highly qualified interpreters, experienced in both Convention and technical language.

Records, medical, safety and site plans

16. Experience with national PCIs has shown that ready access to records, such as medical, health and safety and site/amenity plans, is an important requirement. This should be addressed during the inspection preparations.

17. Experience with national PCIs has also shown that access to medical records showing accidents at the site is a valuable source of information. During the first exercise there was a delay in locating these as it took the inspection team sometime to become acquainted with the Challenged State's accident recording system. There may be advantage in the Technical Secretariat collecting and maintaining information on the health and safety regulations at relevant facilities for as many States Parties to the Convention as have them so that on arrival at an inspection site an inspection team are aware of the procedures for record keeping and can ask the right questions.

Challenging State Observer

18. On one of the exercises the Challenging State Observer (CSO) adopted a deliberately awkward and inquisitive role, posing questions directly to the representatives of the Challenged State. This sometimes resulted in disruption for the IT as two lines of questioning were established, sometimes running simultaneously. Any questions by the CSO should be directed through the Chief Inspector. This transfers responsibility for handling the CSO to the IT.

19. During the same exercise the CSO sought and was offered personal access to part of the site already visited by a sub-team of the IT. The CSO should not be offered such access unaccompanied by the IT, nor must the IT be put in the position of having to accompany the CSO on a visit arranged separately by him and the HT. The initiative on the inspection must lie with the IT, not the CSO.

20. This confirmed experiences from national PCIs that the role and rights of the CSO need to be carefully and clearly defined.

Inspector training

21. Experience on these joint exercises and earlier national PCIs has demonstrated that CWC inspectors will need considerable training on the conduct of inspections, sampling techniques, etc. apart from their own expert knowledge. Basic check-lists of the many tasks and inspection evaluation criteria would be an important guide. This requires further elaboration.

Inspection reports

22. On both exercises the Inspection Team prepared a preliminary summary report on the outcome of the inspection, followed later by a full report. These reports were written in a format which might be an appropriate model for the Convention itself. Copies of these four reports are attached at Annexes A-D to this paper.

Conclusion

23. The Federal Republic of Germany and the United Kingdom have drawn a number of conclusions from the two joint Practice Challenge Inspections described above. The two joint exercises have served to both confirm the lessons already drawn from their respective national PCIs, and to give new insights into challenge inspection practice and procedures. They have also served to reaffirm to both countries the value of the concept of challenge inspection as an effective means of deterring circumvention of the Chemical Weapons Convention.

Annex A

TS/CI/0009A
24 May 1990
Restricted Distribution
Original: English

Organization for the Prohibition of
Chemical Weapons
TECHNICAL SECRETARIAT
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Director-General

CHALLENGE INSPECTION

Preliminary Report of Inspection Team

1. Under the provisions of the Chemical Weapons Convention Article IX and Inspection Protocol an inspection was carried out in the Federal Republic of Germany between 21-23 May 1990. The Inspection Team consisted of five inspectors.

2. Site to be inspected

An airforce base in the Federal Republic of Germany.

3. Reason provided by challenging State

"Suspicion of CW storage and related delivery systems in contravention of Articles I and IV of the Convention."

4. Description of inspected area

Airforce main operating air base and associated hangars, munition storage facilities; maintenance areas and facilities; POL stores; office and accommodation areas (including training centre).

5. Summary report

During inspection the IT visited all parts of the site. Access was granted to all buildings and locations requested by the IT. Nine environmental samples were collected, and five munition samples were selected at random for x-ray. Subsequent analysis has revealed no evidence of any Schedule 1, 2A, 2B or 3 chemicals. Throughout, the inspected State co-operated with the IT and on all occasions, when required, provided sufficient access and information to the satisfaction of inspectors. With the exception of a "hazard markings list" all documentation requested was made available. The IT did not detect any evidence which would indicate activities incompatible with the Convention.

6. Challenging State Observer

With three exceptions the CSO was granted the same level of access as IT.

7. The final detailed report will provide a description of IT's activities. In accordance with the Protocol on confidentiality all detailed references to the site will be omitted.

signed:

Chief Inspector: .....

Deputy Chief Inspector: .....

Annex B

TS/CI/0009B
6 June 1990
Restricted Distribution
Original: English

Organization of the Prohibition of
Chemical Weapons
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CHALLENGE INSPECTION

Report of the Inspection Team

Introduction

1. In accordance with the provisions of the Inspection Protocol, part V, paragraphs A and B, the IT at the challenge inspection in the Federal Republic of Germany 21-23 May 1990 hereby submits a detailed report of its activities. This report conforms to the guidelines outlined in the CWC Annex on the Protection of Confidential Information.

2. Summary conclusions

These have not altered from those outlined in paragraph 5 of the IT's Preliminary Report. During inspection the IT visited all parts of the site. Access was granted to all buildings and locations requested by the IT. Nine environmental samples were collected, and five munitions were selected at random for x-ray. Subsequent analysis has revealed no evidence of any Schedule 1, 2A, 2B or 3 chemicals. Throughout, the inspected State co-operated with the IT and on all occasions, when required, provided sufficient access and information to the satisfaction of inspectors. With the exception of a "hazard markings list" all documentation requested was made available. The IT did not detect any evidence which would indicate activities incompatible with the Convention.

3. Description of inspected area

Main operating airbase for combat and other types of aircraft hardened aircraft shelters; maintenance hangars and storage areas; POL stores; ammunition storage and processing areas, electronic laboratories; accommodation and office areas including training centre.

4. Inspection Day 1

IT arrived at 1350z and were immediately escorted to the Officers' Mess for a briefing on the nature of the activities at the site. This began at 1355Z and was completed at 1417z. The Receiving State stated that it was not conducting any activity which was in contravention of its obligations under the CWC and other international commitments.

5. The IT immediately requested that transport aircraft traffic out of the base should cease. The IT divided into two groups to seal the perimeter and secured areas within the airbase, such as ammunition storage areas; storage areas and rail sidings; Ministry of Transport/Airforce aerial survey hangars. One entrance was left unsealed to permit entry/exit of personnel, but was monitored by members of IT technical support staff. The IT accepted a site tour offered by the HT.

6. The Receiving State confirmed that there were no scheduled chemicals present within the site. (The IT found no evidence during the inspection to indicate the contrary).

7. Day 2, 22 May

The IT split into two groups: Team A's activities are described in paragraphs 8-16, those of Team B in paragraphs 17-34.

Team A

8. Area 1

(i) Description

The Ammunition storage area in the South Eastern part of the airbase.

(ii) Inspection activity

The Ammunition Classification book was examined; a manhole cover near the Guard-room was examined, it contained stopcocks/valves for the area services.

Three wooden lockers were examined; two of these had a five Division hazard 4 symbol. The third contained some smoke grenades and cartridges.

An electricity sub-station was locked, however, the external indications were consistent with its claimed purpose.

Following a walk-through of an ammunition workshop, the team encountered a larger building which was sub-divided into smaller areas which contained a battery storage area; an ammunition training room; respirator signs for use when handling phosphorus ammunition; and a whole body suit for handling phosphorus. A sample was taken from a static water tank.

A storage building containing crates of inert practice ammunition was examined; one crate was opened to verify the contents.

By agreement with the inspected State, six of the main ammunition storage bunkers were selected for internal inspection. These contained different types of ammunition. Of these one box of flares was removed to the ammunition workshop for closer examination; a chest containing igniters was opened to verify contents; a bomb was moved to the workshop for further analysis; one bomb and a pallet of HE ammunition were selected for x-ray.

9. Area 2

(i) Description

Ammunition workshop.

(ii) Inspection activity

The items selected from the storage bunkers were examined in closer detail. A bomb was subjected to sonic testing and a stethoscopic examination. This did not provide sufficient assurance and the Chief Inspector requested that this munition should be detonated at an approved site with a member of the IT present. This was agreed. X-rays were taken of the other designated items. Subsequent examination of the plates confirmed that none contained CW agents.

10. Third area

(i) Description

Barrack store.

(ii) Inspection activity

No evidence of CW activities were discovered. There was no NBC protective equipment on-site.

11. Fourth area

(i) Description

Medical centre.

(ii) Inspection activity

The Chief Inspector requested the Station's Accident Book. The Senior Doctor claimed that he did not hold such an item. After further questioning it transpired that such books were in fact held in individual first aid boxes.

12. Fifth area

(i) Description

Technical store.

(ii) Inspection activity

Filters were collected from two respirator canisters which had purportedly been used during recent training exercises; a returned NBC respirator carrier case; and an unmarked container.

13. Sixth area

(i) Description

Hardened Aircraft Shelters (HAS).

(ii) Inspection activity

A total of nine HAS were visited, with three closely examined. The HAS so examined each contained a combat aircraft, one of which was being refuelled. From these samples were collected two drop tanks and a port wing fuel tank.

14. Seventh area

(i) Description

A fighter bomber wing HQ.

(ii) Inspection activity

The medical book, armoury and briefing room were all examined. A small shrouded store was seen: the escorting officers claimed that this contained NBC stores. The shroud was lifted briefly to enable the inspectors to determine that the items were not related to prohibited CW activity. Two small adjacent buildings were inspected: one contained runway de-icing equipment. Two floor wipe samples were collected from the empty building.

15. Eighth area

(i) Description

Petrol Oil and Lubricant (POL) store at the Eastern side of the airfield. This contained pumping equipment, underground storage tanks for fuel and slops.

(ii) Inspection activity

Samples were collected from tanks A and B, wipe samples from the "avgas" tanks; from a jerry can adjacent to one service building; soil sample from ground adjacent to tank 4; and from the sump in Building A. A number of fuel drop tanks, adjacent to the POL facility, were examined.

16. Ninth area

(i) Description

HQ and service accommodation buildings 2-3 km south of main airfield, included motor transport pool, utilities and accident recovery, NBC training ground.

(ii) Inspection activity

A sample from a tyre found on the NBC training ground/accident recovery was taken. The accident book was examined and samples collected from the following locations and items: the belt of a hazard sign; a lorry mud flap; an inspection pit slat and the filter from a runway cleaning vehicle.

Team B

17. Area 1

(i) Description

At the eastern side of the airbase there was a mock aircraft in burning area which was claimed to be used for fire-fighting training. This was in a small circular pit.

(ii) Inspection activity

Liquid samples were taken from this area as were scrapings from burned wooden embanking which surrounded the training area.

18. Second area

(i) Description

Adjacent to burning areas there were 10 Hardened Aircraft Shelters (HAS) some of which were grass covered or undergoing repair. There were also two other structures: an office/accommodation building and a hardened fire tender garage.

(ii) Inspection activity

The first HAS contained an aircraft and support equipment. The second HAS was used as a store. The key was not immediately available so the entrance was sealed for subsequent examination. Inside were a large number of wooden crates. Whilst the challenging State escorts expressed their readiness to open any or all the crates, the IT chose not to ask that it be done.

A further six HASs were entered and inspected. None contained aircraft but some contained fire-fighting and maintenance equipment, and various miscellaneous stores.

The accommodation/office building was entered to examine the medical kit. This only contained bandages, splints, plasters and cotton wool.

There was some discussion with the escorting officers on the function of a hardened building adjacent to one of the HAS. It had two double doors with a yellow triangular hazard/warning/marking symbol "EX". This was described as a wartime fire tender station which was currently empty. Keys were not immediately available, but the escorts were prepared to obtain these straightaway. The IT decided against inspection.

19. Third area

(i) Description

This area contained one large building described as a NBC laboratory and anti-aircraft training area. One part of the building was marked with warning symbols for breathing apparatus, flammable and corrosive materials.

(ii) Inspection activity

Access was granted to all parts of the building, but to only one inspector at a time. However, the keys for one part were not immediately available. This area was sealed for subsequent inspection. The Deputy Chief Inspector visited the anti-aircraft training area in which there was some disassembled equipment and trailers. The laboratory area was also examined. When the keys for the storage area arrived, there were four shrouded objects which proved to be NBC decontamination materials, primarily "fullers Earth".

20. Fourth area

(i) Description

Adjacent to Area 3 was an ammunition training/assembly area. Fire hazard symbol 3 was outside the building lading apron.

(ii) Inspection activity

All inspectors were allowed access to this facility which primarily consisted of one large assembly area adjacent to which was a storage room. This area contained training rounds only. Most of the weapons were either solid lead or filled with plaster of paris. There were also two types of sub-munitions. Four training rounds were selected at random for disassembly. The escorting officers agreed. The items were as described. A revetted holding area adjacent to this building was examined; it was empty.

21. Fifth area

(i) Description

Two large aircraft hangars connected by office building; large holding apron in front with two engine exhaust baffles. One aircraft being refuelled from bowser. At the rear of this main area were four small buildings/structures: an electronics laboratory; office block; generator building; enclosed structure containing fan cooled electronic equipment.

(ii) Inspection activity

The aircraft wings were examined for hard points; jet engine exhaust inspected and refuelling apparatus was checked. The first hangar had four large blue containers; these were described as for engine/gear box components. These were examined and air sample was taken from one of them. The second hangar contained one aircraft; swab samples were taken from two purportedly electronic equipment ventilation portals. These were only three to four inches in length by one inch. Two of the adjoining offices were visited. Both were for storing and recharging batteries. The hangar's first aid box was examined. At the rear of the two hangars the IT visited an enclosed revetted structure; this contained a fan cooled electronic box. In the electronics laboratory 50 per cent of the rooms/storage areas were visited.

22. Sixth area

(i) Description

Although in a self-contained fenced-off area this facility had been sealed on Day 1. The IT were informed that this area came under the control of the Ministry of Transport. It contained one large aircraft hangar/storage area on each side of holding area with combined office/aircraft maintenance hangar at the north side. At the rear of this facility there were two large heating fuel tanks and chimney stack.

(ii) Inspection activity

The IT drove into the first hangar which was completely empty. There were large heating fans/ventilation along the rear wall. The IT walked through the second hangar in which there were two a/c undergoing repair. Two oil drums were examined: both were empty. A tour of the remainder of the building revealed offices, canteen areas and basement.

23. At 12:15 Teams A and B met at the POL store on the south edge of the inspected area to consider further inspection plan.

24. All inspectors visited a large administrative building to examine maps and documentation covering mains water supply, sewage/effluent outflows; gas and electricity cables/ducting; and explosive safeguards. Following this the IT again split into two groups.

25. Seventh area

(i) Description

A Rail Holding/transfer sidings area at the west side of the airbase which connected with the main rail network. There were eight 75 ton oil tanker wagons which had been sealed in their enclosure on Day 1.

(ii) Inspection activities

Having ensured the integrity of seals on the entrance/exit gates, two liquid samples were collected from a tanker, one from a side valve on the solebar, the other from the roof valve.

26. Eighth area

(i) Description

Enclosed compound situated adjacent to the rail holding sidings which contained some 16 crates. Immediately to the south of this location was a mainstream/storage building some 100 m long.

(ii) Inspection activities

The crates were described as aircraft engine containers. One crate was selected and opened; it was empty. On route to the next inspected zone the IT walked through the maintenance building.

27. Ninth area

(i) Description

Opposite Area Eight there was a small fenced-off compound used to store nitrogen/oxygen for welding purposes; and a small fuel bowser. To the north of this area there were four storage huts close together. Opposite these there was a fenced-off derelict and overgrown area. The HT claimed that this was used to store defective machinery. This was empty.

(ii) Inspection activities

The IT selected two of the corrugated iron huts for examination; both contained jerry cans for petrol and diesel fuel. One was opened to confirm this.

28. Tenth area

(i) Description

South-east of Area Nine there were two large hangars; one was used for engine maintenance, the other for apprentice training.

(ii) Inspection activities

The IT walked through the apprentice training area and took swab samples from an engine mounted on trestles. The maintenance hangar contained two aircraft and what appeared from a distance to be missiles. On closer examination the two items were bomb racks.

29. Eleventh area

(i) Description

Fire station.

(ii) Inspection activities

Two emergency fire tenders - one inside the garage, and one parked outside - were examined. Neither contained any chemical decontaminants. Although both contained breathing apparatus and asbestos suits, neither had any NBC suits or respirators. A sample of rubber was collected from a rear tyre on one tender.

30. Twelfth area

(i) Description

Aircraft engine test centre, two large hangar structures with exhaust ports/baffles at the rear.

(ii) Inspection activities

A swab sample was collected from the rear wall of one of the exhaust ports.

31. Thirteenth area

(i) Description

At the north end of the airbase there were two fenced-off compounds; the one nearest the north gate contained two small buildings one of which was derelict. It also had building materials, aggregates - and runway repair materials. The second fenced-off enclosure was surrounded by embankments and had an explosive fire hazard marking symbol 1. The building was protected by lightening conductors.

(ii) Inspection activities

The IT requested access to the second enclosure (an ammunition storage building); this was granted. Most of the stores within were training rounds. At the north-east corner of the building there were crates which on inspection contained what were stated to be live 250 kg HE bombs. The IT requested that one round should be taken for x-ray. The escorting officers were prepared to allow x-ray on the following day. The IT sealed the munition and crate for transport to the x-ray facility.

In the first enclosure the IT requested and were allowed access to the larger of the two buildings which contained building stores structures in the building storage area (the second building was clearly derelict). Samples were collected from metal covered ducting channels from the floor of the building. At the rear of this structure there were six vacuum sealed canvas containers used to hold pumping/compressor equipment. The

IT requested that a bulldozer be summoned to move three of the piles of sand and aggregates to ensure that they were not being used to conceal a burning ground or access to underground storage tanks/munitions. The escorting officers agreed.

32. Fourteenth area

(i) Description

Access point to sewer/effluent outflow pipe outside north-east corner of airbase.

(ii) Inspection activities

Liquid samples were collected from the two outflows which met at this location.

33. Fifteenth area

(i) Description

Two buildings one of which was hardened, had no windows and had a large entrance door marked Decontamination Area. The smaller of the two had a fire division hazard 3 marking.

(ii) Inspection activities

The IT requested access to the smaller of the two structures. The escorting officers were only prepared to allow one inspector inside, but not the CSO. The CSO expressed his severe concern at his exclusion and that he would be reporting adversely to his Government. After further negotiation the CSO was allowed access.

The structure itself contained an equipment maintenance area which was partitioned by a shroud. Both the CD Inspector and CSO were permitted to look behind the shroud which was concealing disassembled electronic equipment, casing and instrumentation. The storage area contained what appeared to be two types of munitions stacked two high on each side of the hall. There were several items on two trolleys. The escorting officers explained that the objects contained sensitive electronic equipment. The Inspector asked if they could be x-rayed to confirm this. The request was refused on the grounds that x-rays would damage the equipment. The Inspector then asked if they could be disassembled. This request was agreed: one of the two types would take five minutes, the other three hours. Two items were chosen, one of each type - one from a trolley, the other from the lower tier on the left hand side area. This was broken down sufficiently to enable the Inspector to conclude that it was not connected with CW. The second item was marked for subsequent examination. The CSO expressed satisfaction with the level of access.

(iii) The full IT (Team B) and CSO were permitted access to the second building where four small offices/storage areas were examined. There was an enclosed area which contained an access point to underground facilities or a basement. Access to this underground area was requested and granted. In the basement there was an enclosed area containing electronic equipment; the CSO was refused access. The IT asked why there was such a level of protection particularly NBC for what was claimed to be electronic workshops when earlier the IT had seen an unprotected electronic facility. The escorts replied that this was because of the importance of this particular building. Samples were taken from roof ventilation filters.

Annex C

Organization for the Prohibition of
Chemical Weapons
TECHNICAL SECRETARIAT
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21 June 1990

Challenge Inspection

Preliminary Report of Inspection Team

1. Under the provisions of the Chemical Weapons Convention, Article IX and the Inspection Protocol, an inspection was carried out in the United Kingdom between 18 June - 21 June 1990. The Inspection Team (IT) consisted of six inspectors and two assistants.

2. Site to be inspected

A United Kingdom conventional ammunition storage facility and associated installations.

3. Reason provided by Challenging State

"Suspicion of storage of Chemical Weapons, munitions and/or bulk, in contravention of Articles I and IV of the Convention".

4. Description of inspected area

United Kingdom Army Central Armament Depot and associated munition storage facilities, storage facilities for other materials, office areas including medical centre, fire brigade office, etc.

5. Summary report

During inspection the IT visited all parts of the site. Access was granted to all buildings and locations requested by the IT. Twelve munition samples were selected at random for x-ray, 16 environmental samples were collected and 6 of them analysed. Subsequent analysis has revealed no evidence of any Schedule 1, 2 A, 2 B or 3 chemicals. Throughout, the Challenged State co-operated with the IT and, when required, provided sufficient access and information to the satisfaction of inspectors. All documentation and statistics requested were made available. The IT did not detect any evidence which would indicate activities incompatible with the CW Convention.

The Challenging State Observer was granted the same level of access to all facilities as IT.

6. Final report

A final report will provide description of IT's activities. In accordance with the Protocol on Confidentiality all detailed references to the site will be omitted.

signed:

Chief Inspector: .....

Deputy Chief Inspector: .....

Annex D

Organization for the Prohibition of
Chemical Weapons
TECHNICAL SECRETARIAT
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31 July 1990

Challenge Inspection

Report of Inspection Team

1. Introduction

In accordance with the provisions of the Protocol on Inspection Procedures, a challenge inspection was carried out in the United Kingdom from 18 June to 21 June 1990. This report confirms the conclusions outlined in paragraph 5 of the Preliminary Report dated 21 June 1990 and describes the actions taken.

2. Summary evaluation

During the inspection all parts of the ammunition storage depot, including an adjacent subdepot, were inspected. The Inspection Team (IT) was granted access, on request, to all buildings/facilities. During the inspection 12 different types of ammunition were selected for non-destructive x-ray examination and taken to an agreed location within the military installation for examination. In addition, 16 different samples were collected, some of which were analysed on-site. No substances on Schedule 1, 2 A, 2 B or 3 were found. Throughout the inspection the Challenged State co-operated effectively with the IT. All questions raised were satisfactorily answered within a short time, any doubts were removed through further supplementary questions. No indications were found which could corroborate any suspected violation of the provisions of the CW Convention.

3. Object of the inspection

United Kingdom Central Armaments Depot with ammunition storage site, workshops, depots for a variety of supply items, medical centre, fire-fighting department, road/rail trans-shipment facilities, water supply and sewage system, ammunition destruction facilities, administrative buildings as well as a neighbouring subdepot.

4. Inspection agenda

The IT touched down on 18 June 1990 at 14.30 hours at the airport designated as Point of Entry. The IT was welcomed by representatives of the Challenged State, who declared non-possession of CW. After the instruments brought in by the IT, including a mobile mass spectrometer (MM1), had been carefully examined, the IT was escorted to the hotel reserved for them in a

nearby city. It was agreed to start the inspection at 09.00 hours on 19 June 1990. During a first internal meeting of the IT an approach on how to conduct the inspection was outlined and each inspector was assigned specific tasks.

On 19 June 1990 the IT was met from the hotel by Home Team members and escorted to the Officers Club within the inspection site. Then, military personnel of the Home Team gave a detailed briefing on the purpose and structure of the depot and informed on security/safety regulations prior to entry into the ammunition storage site. The IT accepted a helicopter overflight offered to provide it with a first impression from the air of the whole premises. The inspection of 40 bunkers in the main site and 7 bunkers in the subdepot was offered to the IT at their choice. During the briefing Challenged State representatives again made it clear that the United Kingdom was fully in compliance with its obligations under the CW Convention. This was followed by a question period by the IT. The IT leader put forward the following requirements:

- Stopping of the whole of road and rail transport traffic to and from the installation
- Closing down of all access points with the exception of a single guarded access
- Handing over of all keys to the conference room assigned to the IT
- Handing over a general plan indicating buildings and their use
- Inspection of plans for underground water and electricity supply
- Information on water and electricity consumption during the last two years
- Information on accidents and injured persons in 1987 and 1988
- Information on training status of medical personnel
- Information on chemical substances (Schedules 1 through 3) stored in the area
- Handing over the storage plan of the ammunition bunkers
- IT to be escorted by an ammunition officer capable of explaining any symbols/signs
- Provision of radio link for two sub-teams
- Provision of telephone link to Technical Secretariat

With the following exceptions, all these demands were met during the inspection: Keeping open three access points under IT control (so agreed); no storage plan for the whole of the ammunition depot was provided, since not required for purposes of verification (so agreed).

The Home Team was informed by the IT on the activities planned for the next half-day in advance.

After the helicopter flight of the whole IT, the IT split up into two sub-teams for the further course of inspection. Both sub-teams met daily before the lunch break and before the end of working hours to discuss inspection events and further activities.

Main tasks for sub-team 1: Examination of ammunition, workshops and directly associated facilities; main taks for sub-team 2: Sampling and analysis, examination of the general area, fire fighting department, medical centre, administration, sewage system.

During the inspection both sub-teams selected 12 different types of ammunition and had them transported to the agreed location for non-destructive x-ray examination. The x-ray and gamma pictures were countersigned by the IT and a Home Team member. The evaluation of the pictures available to the Technical Secretariat has given no indication of the presence of chemical warfare agents.

Sub-team 2 collected 16 samples during the inspection. Types of samples and site of collection, including date, time and sampling method, were entered into a "Sample Document", which was signed both by the IT and the Home Team after the sealing of the sample. The samples were then picked up by a vehicle and taken to the mobile laboratory close to the guards building at the main entrance of the depot.

In addition to the 16 samples from the depot area, another 4 sample mixes were provided by the Challenged State, which served as standards for checking the MM1.

Due to technical problems with the power supply of the measuring system, chemical analysis could not start before the afternoon on 20 June. High fluctuations in the output voltage of the power supply system within the area of main depot led to a situation where the MM1 failed to operate. Therefore, only some of the samples were examined on site.

Further analyses were carried out in the laboratory (Munster) after return of the IT; six samples collected on-site were selected and evaluated along with remaining test samples, using standard methods and instrumentation restricted to those available during the inspection. The samples are listed and the sampling procedures, measuring methods and results described in Annex D/1.

The inspection ended at 16.00 hours on 20 June 1990. On 21 June 1990 Challenged State representatives received summary information about the results of the inspection.

Annex D/1

1. List of samples

No.	Site	Time	Type of sample
1	Bldg 1	10.15	Bucket containing solvent residues, 10 strokes on Tenax-TA
2	Shed 1	10.33	Rubber breakouts from tank rollers
3	Shed 1	10.37	Rubber breakouts from tank rollers
4	Security Post	11.30	Soil sample
5	Security Post	11.30	Soil sample
6	Security Post	11.30	Sample of wet soil from a manhole
7	Demolition range		Sample of humus soil
8	Incinerator	11.56	Ash
9	Incinerator		Water sample
10	Incineration plant	12.00	Burnt paint from lid of fire fighting water container
11	Site of demolished bunker	14.40	Soil sample from ditch next to concrete platform
12	Site of demolished bunker	14.43	Alphalt sample from platform
13	Bunker A	14.45	Sample from bunker floor taken with ethanol-impregnated pad
14	Bunker A	15.00	Sample on Tenex-TA with preheated silicone diaphragm detector head
15	Opposite Bunker B	15.15	200 ml of water from waste pipe
16	Bunker C	15.40	Sample on Tenax-TA with preheated silicone diaphragm detector head
A, B, C and D			Samples of organic chemicals (liquids/solutions) supplied by the Home Team served as standards to test the MM1

2. Sampling and sample preparation

Gas samples Nos. 1, 14 and 16 were taken by absorption on Tenax-TA tubes using a Dräger handpump, the sampled volume being 1 litre (10 strokes).

In the case of samples 14 and 16 collected from suspected surfaces, Tenax-TA tubes were used in combination with a membrane contact head heated to 150° C in order to thermally desorb volatiles from the surface.

Water samples Nos. 9 and 15, prior to being analysed only for presence of volatile organic components, underwent a "purge-and-trap" procedure. Approximately 200 ml of each of the samples were purged with clean air at a rate of 300 ml/min for 5 min and the volatiles adsorbed with a Tenax-TA tube.

Soil and other solid samples (5 g each) were subjected to simple extraction with 10 ml of diethyl ether in a wide-necked flask, the extract being decanted and upgraded to approximately 100 µl in a tempered nitrogen stream. An aliquot 2 µl of the solution was then injected into a Tenax-TA adsorption tube.

Samples of the test mixtures A, B, C and D were prepared for analysis by injecting aliquots of up to 1 µl into a Tenax-TA tube using a Hamilton syringe.

3. Analysis of samples

Out of a total of 16 samples taken during the inspection, 6 samples underwent combined gas chromatographic/mass spectrometric (GC/MS) evaluation with the mobile mass spectrometer MM1. In addition all of the four test samples were analysed.

Although most of the samples were investigated only after return to Munster laboratory, the instrumentation used there for evaluation was restricted to that present at the inspection site.

The analysis of samples was carried out using thermal desorption of Tenax tubes at 200° C with a desorption block directly connected to a 20 m fused silica capillary column (DB 5 bonded phase, 0.32 mm I.D.). The GC run followed a temperature programme from 30 to 200° C. The MM1 was operated in the spectra serial mode with a scanning range of 45 - 250 amu.

Spectral data were stored in a portable Compaq III data system coupled on-line with the MM1. Mass spectra were evaluated using an internal spectral library, backed up by various hard-copy libraries of mass spectra.

4. Summary of analytical results

Sample	
No. 1	Mixture of technical grade solvents: chloroform, cyclopentane, toluene, tetrachloroethene, chlorobenzene, dichlorobenzene, aliphatic hydrocarbons; tentatively: ethyl butyrate, i-pentyl acetate
No. 5	hydrocarbons
No. 7	hydrocarbons
No. 8	hydrocarbons
No. 12	tar constituents: methylphenol, dimethylphenol, azulene, methylnaphthalene, biphenyl, dimethylnaphtalene, methylbiphenyl, acenaphthene, dibenzofurane
No. 15	dichloromethane, chloroform, tetrachloroethane
Test sample A:	methyl salicylate; impurities: phenol, methyl benzoate, hydrocarbons
Test sample B:	diisopropyl methylphosphonate (DIMP, chemical listed in Schedule 2, No. 1); diisopropyl phosphite; triisopropyl phosphate; phthalates
Test sample C:	triethyl phosphate
Test sample D:	consists of one main constituent, for which no mass spectrum was available for reference; spectrum indicates presence of a scheduled chemical (Schedule 2, No. 1), possibly a thiophosphonic acid derivative; 12 trace level constituents discernible; sample requires further laboratory investigation.